

# NEBRASKA DEPARTMENT OF ROADS

## Noise Analysis and Abatement Policy

---

By  
Nebraska Department of Roads  
Planning and Project Development Division  
Noise and Air Section  
Lincoln, NE

**7/13/2011**  
Effective Date

Monty Fredrickson

7/13/2011

Nebraska Department of Roads  
Director/State Engineer

Date

Joseph Werning

7/13/2011

Division Administrator  
Federal Highway Administration

Date

# Table of Contents

<b>I.</b>	<b>Introduction and Purpose.....</b>	<b>3</b>
<b>II.</b>	<b>Definitions.....</b>	<b>4</b>
<b>III.</b>	<b>Applicability.....</b>	<b>6</b>
<b>IV.</b>	<b>Traffic Noise Prediction.....</b>	<b>6</b>
<b>V.</b>	<b>Analysis of Traffic Noise Impacts.....</b>	<b>6</b>
<b>VI.</b>	<b>Analysis of Noise Abatement Measures.....</b>	<b>9</b>
<b>VII.</b>	<b>Feasibility and Reasonableness.....</b>	<b>10</b>
<b>VIII.</b>	<b>NEPA.....</b>	<b>13</b>
<b>IX.</b>	<b>Information for Local Officials.....</b>	<b>13</b>
<b>X.</b>	<b>Federal Participation.....</b>	<b>14</b>
<b>XI.</b>	<b>Construction Noise.....</b>	<b>14</b>
<b>XII.</b>	<b>Appendices.....</b>	<b>21</b>

## Charts and Tables

<b>A.</b>	<b>Noise Abatement Criteria Table.....</b>	<b>15</b>
<b>B.</b>	<b>Noise Analysis and Abatement Flowchart.....</b>	<b>16</b>
<b>C.</b>	<b>Final Noise Summary Report Flowchart.....</b>	<b>17</b>
<b>D.</b>	<b>Example Ballot.....</b>	<b>18</b>
<b>E.</b>	<b>Voting Visual.....</b>	<b>19</b>
<b>F.</b>	<b>Voting Tally Sheet .....</b>	<b>20</b>

## **INTRODUCTION**

This document contains the Nebraska Department of Roads' (NDOR) policy on highway traffic noise and construction noise. This policy describes the NDOR's implementation of the requirements of the Federal Highway Administration (FHWA) Noise Standard at 23 Code of Federal Regulations (CFR) Part 772 (see Appendix). This policy was developed by NDOR and reviewed and concurred with by FHWA.

During the rapid expansion of the Interstate Highway System and other roadways in the 20th century, communities began to recognize that highway traffic noise and construction noise had become important environmental impacts. In the 1972 Federal-aid Highway Act, Congress required FHWA to develop a noise standard for new Federal-aid highway projects. While providing national criteria and requirements for all highway agencies, the FHWA Noise Standard gives highway agencies flexibility that reflects state-specific attitudes and objectives in approaching the problem of highway traffic and construction noise. This policy contains the NDOR's policy on how highway traffic noise impacts are defined, noise abatement is evaluated, noise abatement decisions are made, and how noise impacts/abatement are decided for highway projects.

In addition to defining traffic noise impacts, the FHWA Noise Standard requires that noise abatement measures be considered when traffic noise impacts are identified for Type I Federal projects. Noise abatement measures that are found to be feasible and reasonable must be constructed for such projects. Feasible and reasonable noise abatement measures are eligible for Federal-aid participation at the same ratio or percentage as other eligible project costs.

## **PURPOSE**

This policy describes the NDOR program to implement 23 CFR 772. Where FHWA has given NDOR flexibility in implementing the standard, this policy describes the NDOR approach to implementation.

## **NOISE STANDARDS**

This policy outlines the NDOR program to implement the FHWA Noise Standards found in 23 CFR 772. They include traffic noise prediction requirements, noise analyses, noise abatement criteria, and requirements for informing local officials.

## DEFINITIONS

Acoustic Feasibility – NDOR has established that a minimum of 60% of front row impacted receptors directly behind the noise wall (noise wall must extend entirely across impacted receptor's property line) must achieve a 5 dB(A) noise reduction in order for noise abatement to be feasible.

Benefited Receptor - The recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dB(A).

Common Noise Environment - A group of receptors within the same Activity Category in the Noise Abatement Criteria Table (pg 15) that have similar topographic features and are exposed to similar noise sources and levels such as, traffic volume, mix, and speed. Generally, common noise environments occur between two secondary noise sources, such as interchanges, intersections, cross-roads.

Date of Public Knowledge - The approval date of the Categorical Exclusion (CE), the Finding of No Significant Impact (FONSI), or the Record of Decision (ROD), defined in 23 CFR part 771.

Design Year - The future year used to estimate the probable traffic volume for which a highway is designed.

Existing Noise Levels - The worst noise hour resulting from the combination of natural and mechanical sources and human activity usually present in a particular area.

Feasibility - The combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure.

Impacted Receptor - The recipient that has a traffic noise impact. For levels for impact determination see NAC Table pg. 15.

Leq - The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.

Multi-family Dwelling - A residential structure containing more than one residence. Each residence in a multi-family dwelling shall be counted as one receptor when determining impacted and benefited receptors.

Noise Abatement Criteria (NAC) - Traffic noise levels set by the FHWA to determine a traffic noise impact, or the absolute levels where abatement must be considered. Based on the land use adjacent to traffic noise, the NAC is organized by activity categories A-G each with a specific noise level that determines an impact.

Noise Barrier - A physical obstruction that is constructed between the highway noise source and the noise sensitive receptor(s) that lowers the noise level, including stand alone noise walls, noise berms (earth or other material), and combination berm/wall systems.

Noise Reduction Design Goal(Reasonable) – NDOR has established that a minimum of 40% of front row benefited receptors directly behind the noise wall (noise wall must extend entirely across benefited receptor's property line) must achieve a 7 dB(A) noise reduction in order for noise abatement to be reasonable.

Permitted - A definite commitment to develop land with an approved specific design of land use activities as evidenced by the issuance of a building permit.

Property Owner - An individual or group of individuals that holds a title, deed, or other legal documentation of ownership of a property or a residence.

Reasonableness - The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure.

Receptor - A discrete or representative location of a noise sensitive area(s), for any of the land uses listed in the NAC Table pg. 15.

Residence - A single-family dwelling or a unit in a multi-family dwelling.

Statement of Likelihood - A statement provided in the environmental clearance document based on the feasibility and reasonableness analysis completed at the time the environmental document is being approved.

Substantial Construction - The granting of a building permit as it applies to development of land adjacent to the highway prior to right-of-way acquisition or construction approval of the highway.

Substantial Noise Increase - One of two types of highway traffic noise impacts. For a Type I project, NDOR has established that an increase in noise levels of 15 dB(A) in the design year over the existing noise level is classified as a substantial noise increase.

Traffic Noise Impacts - Design year build condition noise levels that approach or exceed the NAC listed in the NAC Table pg. 15 for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels.

Type I Project.

- (1) The construction of a highway on new location; or,
- (2) The physical alteration of an existing highway where there is either:
  - (i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
  - (ii) Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
- (3) The addition of a through-traffic lane(s), including the addition of a through-traffic lane that functions as a HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
- (4) The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or
- (5) The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
- (6) Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
- (7) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.
- (8) If a project is determined to be a Type I project under this definition then the entire project area as defined in the environmental document is a Type I project.

Type II Project - A Federal or Federal aid highway project for noise abatement on an existing highway. NDOR does not have a Type II program.

Type III Project - A Federal or Federal aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis. Overlays and non-capacity adding bridge work are examples of Type III projects.

## **APPLICABILITY**

This policy applies to all Type I Federal highway projects in the State of Nebraska; that is, any projects that receive Federal-aid funds or are otherwise subject to FHWA approval. They include Federal projects that are administered by Local Public Agencies (LPAs) as well as NDOR.

If there are any questions about whether a project is subject to this policy or the FHWA Noise Standard, contact the NDOR Noise and Air section at 402-479-4684. Due to the long lead time to complete a traffic noise study, it is critical to determine if a noise study is necessary early in project scoping.

The requirements of this policy apply uniformly and consistently to all Type I Federal projects throughout the State.

Type II Program. The State of Nebraska does not have a Type II program.

## **TRAFFIC NOISE PREDICTION**

NDOR utilizes the "FHWA Traffic Noise Model" (TNM) as the method to predict traffic noise levels. Any noise analysis on a Type I project must use the latest FHWA TNM as per 23 CFR 772.9. TNM Look-up tables cannot be used to predict noise levels on any project.

Future noise levels must be predicted for all reasonable alternatives under detailed study in the National Environmental Policy Act (NEPA) process using forecasted traffic volumes at least 20 years after the year of construction. Traffic conditions representing the peak noise hour are required as TNM inputs. The peak noise hour may not be the peak traffic hour in urban areas as congestion can slow traffic which reduces noise levels. Average pavement type shall be used in the FHWA TNM unless NDOR substantiates the use of a different type for approval by the FHWA.

Refer the *TNM Users Guide* which can be found on the FHWA website for instructional guidance and additional information on TNM parameters.

## **ANALYSIS OF TRAFFIC NOISE IMPACTS**

Existing noise levels are determined by applying TNM when the noise is predominantly due to highway traffic during the peak noise hour. Field measurements are taken to validate the results of the traffic noise model and for proposed highways on new alignments where no highway currently exists. Field measurements must be taken at exterior areas of frequent human use or at the ROW line to establish the background noise levels for the area.

When field measurements are taken, an ANSI Type 1 or 2 noise meter shall be used per 23 CFR 772.11. The traffic will be counted during the noise readings and separated into 3 categories: autos, medium trucks, and heavy trucks. Each noise reading will be at least 15 minutes in length for adequate measurement. Due to noise interference from high winds, noise meter readings are not taken in wind speeds that are 12 mph or greater. In identifying noise impacts, the noise receptors will represent an exterior area of frequent human use. Noise modeling or field measurements will employ the noise receptors at these locations. All measurements are performed in accordance with methodology presented in Measurement of Highway Related Noise FHWA-PD-96-046.

For Type I projects, a traffic noise analysis is required for all build alternatives under detailed study in the NEPA process. That is, all reasonable alternatives that have been retained for detailed analysis in the categorical exclusion documentation, environmental assessment or environmental impact statement and NOT rejected as unreasonable during the alternatives screening process. For Tier 1 Environmental Impact Statements or other studies that will examine broad corridors, the appropriate scope and methodology of the noise analysis should be discussed with FHWA and other participating agencies early in the project planning process.

If any segment or component of an alternative meets the definition of a Type I project, then the entire alternative is considered to be Type I and is subject to the noise analysis requirements.

For Type I projects, the noise study area will be from the beginning project construction point to the ending project construction point for the design year for the build alternatives.

Identification of possible noise receptors within the project:

1. Minimum distance to look for receptors is 300 feet from the edge of pavement.
2. If an impact is identified at 300 feet, the next closest receptors would need to be analyzed until a distance where impacts are no longer identified is reached.
3. If no receptors are located within 300 feet, then the closest receptors would need to be analyzed.
4. NDOR is required to identify all expected highway traffic noise impacts from the project. In cases where the roadway is on fill, the analysis area may need to be extended to ensure that all impacts are identified.

The noise analysis must include analysis for each Activity Category present in the study area. For a detailed, full listing of land uses refer to the NAC Table on page 15 of this document.

### **Activity Category A (lands on which serenity and quiet are of extraordinary significance and serve an important public need)**

The highway agency must submit justifications to FHWA on a case-by-case basis to designate any lands as Category A.

### **Activity Category B (exterior areas of single-family and multi-family dwellings)**

The location of receivers in single-family and multi-family dwellings will be in the area of frequent human use. Typically this is the side yard or backyard of the residence. In the extremely rare occasion that no external area of frequent use can be determined (no balconies, playgrounds, swimming pools, picnic areas, etc.) then no further noise analysis would be needed for the dwelling and no noise abatement would be considered for the dwelling.

### **Activity Category C (exterior areas of non-residential lands such as schools, parks, cemeteries, etc)**

The number of receivers analyzed in this category will be based upon the average frontage of the activity category B developments within the project limits. For example, if the average lot frontage of all the category B developments is 50 feet wide, a category C development that has a frontage of 500 feet long would analyze 10 receivers. Receptors will be placed at areas of

frequent human use and will be placed in the area that best represents the worst expected traffic noise condition as to prevent shielding by objects or buildings. The owner of the development or the agency unit directly responsible for the property will receive the votes from only the benefited receptors. See voting on page 10 of this policy.

### **Activity Category D (interiors of Category C facilities)**

NDOR shall conduct an indoor analysis after a determination is made that exterior abatement measures will not be feasible and reasonable. An indoor analysis shall only be done after exhausting all outdoor analysis options. In situations where no exterior activities are to be affected by the traffic noise, or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities, the highway agency shall use Activity Category D as the basis of determining noise impacts. For indoor analysis, noise meter readings will be taken at areas of frequent human use closest to the noise source. The number of votes for this category is based upon the average frontage of the activity category B developments within the project limits. For example, if the average lot frontage of all the category B developments is 50 feet wide, a category D development with a frontage width of 200 feet would receive 4 votes to approve/disapprove noise abatement. The cost/benefitted receiver is calculated based on the cost of the interior noise abatement.

### **Activity Category E (exteriors of developed lands less sensitive to highway noise)**

The number of receivers analyzed in this category will be based upon the length of the property frontage adjacent to the roadway. For every 200 feet of frontage that an activity category E occupies, a receiver will be analyzed at a place of frequent human use. For example, a category E development with a frontage width of 1000 feet would analyze 5 receivers at areas of frequent human use. The owner of the development or the agency unit directly responsible for the property will receive the votes from only the benefited receptors.

### **Activity Category F (land uses that are not sensitive to highway traffic noise)**

No highway noise analysis is required under 23 CFR 772.

### **Activity Category G (undeveloped land)**

Land that is permitted for development (that is, a building permit has been issued on or before the date of public knowledge), that land shall be analyzed under the Activity Category for that type of development.

For land that is not permitted for development by the date of public knowledge, the highway agency shall determine future noise levels pursuant to 23 CFR 772.17(a). The results shall be documented in the project environmental documentation and in the noise analysis report. At a minimum, the analysis should report the distance - measured from the proposed edge of the traveled way - to the NAC for all exterior land use categories. Any noise abatement for such lands shall not be eligible for Federal-aid participation.



### **NDOR Definition of "Approach Level" for NAC.**

The Department has established that a noise level of one decibel less than the NAC in the FHWA Noise Standards constitutes "approaching" the NAC for Activity Categories A-E.

### **NDOR Definition of "Substantial Increase over Existing Noise Level"**

NDOR has defined a substantial increase as a 15 dB(A) over existing noise levels. A substantial increase is independent of the absolute noise level. A substantial noise increase is a noise impact, even if the future noise level is lower than the NAC.

For Type I projects, receptors will be identified with street addresses when possible and always with numeric labels.

## **ANALYSIS OF NOISE ABATEMENT MEASURES**

For Type I projects noise abatement measures shall be considered and evaluated for feasibility and reasonableness where predicted traffic noise levels approach or exceed the noise abatement criteria, or when the predicted traffic noise levels substantially exceed the existing noise levels. In abating traffic noise impacts, NDOR shall give primary consideration to exterior area of frequent human use. When considering abatement measures, NDOR factors the costs and effects of each abatement measure against the amount of benefit. Even if found feasible for a particular area, noise abatement may not be reasonable and will not be applied.

**Noise Barriers:** Barriers are considered as a possible means of noise abatement on Type I federally funded projects where traffic noise is predicted to impact adjacent land uses. Barriers are considered effective when blocking the "line of sight" between the noise source and the noise receiver.

The use of quieter pavements is not an acceptable Federal-aid noise abatement measure for federally funded projects unless approved by the FHWA for a Quiet Pavement Pilot Program. The planting of vegetation is also not a form of Federal-aid noise abatement given that only dense stands of evergreen trees at least 200 feet deep will reduce noise levels.

## FEASIBILITY

**Acoustic Feasibility** - A noise abatement device is considered acoustically feasible when 60% of the front row impacted receivers located directly behind the noise wall (noise wall must extend entirely across impacted receptor's property line) achieves a 5 dB(A) noise reduction. Other significant noise levels within the project area will not prevent acoustic feasibility as long as TNM demonstrates that a wall achieves the 5 dB(A) noise reduction from traffic alone.

**Engineering Feasibility** - The determination that it is possible to design and construct a noise abatement measure. The following items will be considered in determining Engineering feasibility:

1. Can the barrier be designed to fit the topography and still be maintained?
2. Can the exposed height of a noise barrier be built at 30 feet high or less?
3. Safety concerns:
  - A. Can the barrier be located beyond the clear recovery zone?
  - B. Can the barrier be incorporated into existing or designed highway barriers?

If any of the feasibility items 1-3 are checked "NO", the site will be considered not feasible. If the site is considered not feasible, a reasonable analysis will not be done.

## REASONABLENESS

There are three reasonableness factors or "tests" that must be met for a noise abatement measure to be considered reasonable.

1. **Noise reduction design goal of 7 dB(A).** A minimum of 40% of benefited front row receptors directly behind the noise wall (noise wall must extend entirely across benefited receptor's property line) must achieve a 7 dB(A) noise reduction in order for noise abatement to be reasonable.
2. **Cost Effectiveness.** Noise abatement must be cost effective. NDOR defines cost effectiveness as dollars per benefited receiver. Based on construction price estimates for 2010, NDOR will use \$44/ft<sup>2</sup> (re-evaluated every 5 years) for barrier costs. If the cost per benefited receiver is greater than \$40,000, the site will be considered not reasonable. The cost of utility relocation, drainage control, and ROW acquisition will be factored into the cost effectiveness of noise abatement. Aesthetic treatment is not factored into cost.
3. **Viewpoints of the property owners and residents of the benefited receptors.** When it is determined that it would be feasible to provide noise abatement for a site, and a preliminary determination has been made that abatement would be reasonable, a noise abatement public informational meeting will be held as part of the process for a final determination of whether abatement would be reasonable. The benefited property owners and residents will be given an opportunity to vote in the form of a ballot vote (example ballot on pg. 18). NDOR defines a benefited receptor as achieving at least a 5 dB(A) reduction. The benefited property owners and residents will receive a ballot and information packet (map showing the project area and where the proposed noise wall is, a description of the project, anticipated season and year for start of construction, and an example of a completed ballot with how many points the voters ballot will be worth) through certified mail 15 days prior to the public meeting for noise abatement. Ballots are

due 15 days after the meeting date and can be mailed back or returned in person. If property owners or residents have not returned a ballot by 15 days after the public meeting date, a second ballot will be mailed. If the second ballot is not returned within 15 days after it is received, the property owner or resident will not have a vote (NDOR will account for delivery time). Ballots will also be available at the public information meeting.

This public outreach (letters and informational meeting) will be conducted in compliance with the most current, approved version of the NDOR Public Involvement Plan. In addition, early in the NEPA process, protected populations within the environmental study area were identified. If protected populations occur within your study area, the project proponent must be able to demonstrate due diligence to engage these populations. For local governments, coordinate with your Local Project Division Project Coordinator who will consult with a Civil Rights Coordinator for guidance on conducting public outreach in protected populations. NDOR employees conducting public outreach in protected population areas will contact the NDOR Civil Rights Coordinator for guidance.

Noise abatement will be provided only if at least 75% of points from returned ballots are in favor of the proposed noise barrier as a strong majority has historically worked well in Nebraska. If the benefited property owners and residents reject the construction of a noise abatement device, their area will not be reconsidered for future noise abatement unless another Type I project is proposed for the area or if there is a re-evaluation on the current project.

## **Voting**

Consideration of the viewpoints of all the benefited receptors shall be solicited, with weighted voting applied to the first-row owners who live in the residence. Each benefited resident will get one point per ballot. Each owner of a benefited dwelling will also get one point per ballot. Owners who live in a benefited dwelling will receive 1 point per ballot. Owners who live in a benefited first-row dwelling will receive 1 point per ballot. The most points per unit possible are 4. If a unit is un-occupied then this unit will only receive one point by the owner of the unit regardless of where the property is located. See pg 19 of this policy for a visual aid of the voting process.

### ***All residences/dwellings/units***

- 1 point per ballot for all residents of a unit or dwelling
- 1 point per ballot for all benefited property owners

### ***Front row residences/dwellings/units only***

- 1 point per ballot for benefited front row property owners
- 1 point per ballot for benefited front row property owners living in the dwelling or unit

## **Examples:**

Single-family dwelling (not owner occupied) not on front row = 2 points per ballot:  
1 point per ballot vote for all residents of a unit or dwelling (renter)  
1 point per ballot for all benefited property owners

Single-family dwelling owner occupied not on front row = 2 points per ballot:  
1 point per ballot for all residents of a unit or dwelling (owner)  
1 point per ballot for all benefited property owners

Single-family dwelling (not owner occupied) on front row = 3 points per ballot:

- 1 point per ballot for all residents of a unit or dwelling
- 1 point per ballot for all benefited property owners
- 1 point per ballot for benefited front row property owners

Single-family dwelling owner occupied on front row = 4 points per ballot:

- 1 point per ballot for all residents of a unit or dwelling
- 1 point per ballot for all benefited property owners
- 1 point per ballot for benefited front row property owners
- 1 point per ballot for benefited front row property owners living in the dwelling or unit

Multi-family dwelling 6 benefited receivers, one unit owner occupied, not on front row = 12 votes:

Rented Units = 10 points:

- 1 point per ballot one for each renter = 5 points
- 1 point per ballot for each rented unit for owner = 5 points to owner

Owner occupied unit = 2 points per ballot

- 1 point per ballot vote for all residents of a unit or dwelling
- 1 point per ballot for all benefited property owners

Multi-family dwelling with 6 benefited receivers, one unit owner occupied, front row = 19 points:

Rented Units = 15 points:

- 1 point per ballot one for each renter = 5 points
- 1 point per ballot for each rented unit for owner = 5 points to owner
- 1 point per ballot for benefited front row property owners = 5 points to owner

Owner occupied unit = 4 points per ballot:

- 1 point per ballot for all residents of a unit or dwelling
- 1 point per ballot for all benefited property owners
- 1 point per ballot for benefited front row property owners
- 1 point per ballot for benefited front row property owners living in the dwelling or unit

Multi-family dwelling with 6 benefited receivers not on front row = 12 points:

Rented Units = 12 points per ballots

- 1 point per ballot for each renter = 6 points
- 1 point per ballot for each rented unit for owner = 6 points to owner

Multi-family dwelling with 6 benefited receivers on front row = 18 points:

Rented Units = 18 points

- 1 point per ballot one for each renter = 6 points
- 1 point per ballot for each rented unit for owner = 6 points to owner
- 1 point per ballot for benefited front row property owners = 6 points to owner

## NEPA

Information Required for NEPA Decision: Prior to CE approval or issuance of a FONSI or ROD for a Type I project, the NDOR must:

1. Identify and document the locations where noise impacts will occur;
2. Identify and document the noise abatement measures that are feasible and reasonable, and are likely to be incorporated into the project.
3. Identify and document noise impacts for which no abatement appears to be feasible and reasonable.
4. Make every effort to complete a feasibility and reasonableness determination during the NEPA process. If there is not enough design information to determine feasibility and reasonableness, then a mitigation measure shall be included in the NEPA document to complete the process when the design information is available. The completion of the process shall be documented, with the documentation provided to FHWA prior to PS&E.
5. Re-evaluate noise studies to determine if the analysis is still valid in cases where design changes affecting noise (Type I project) are made after NEPA or after the completion of a noise study.
6. Identify and document possible construction noise impacts and associated mitigation in the NEPA document.

Third Party Funding - For Federal projects, third party funding CANNOT be used if the noise abatement measure would require additional funding from the third party to be considered feasible and/or reasonable. Third party funding can only be used to pay for additional features such as landscaping, aesthetic treatments or absorptive treatments for noise barriers that already meet cost-effectiveness criteria.

## INFORMATION FOR LOCAL OFFICIALS

In an effort to prevent future traffic noise impacts on currently undeveloped lands, NDOR shall inform local officials within whose jurisdiction the transportation facility project is located of the following:

- (a) The best estimation of future noise levels (for various distances from the highway improvement) for developed and undeveloped lands and properties in the immediate vicinity of the transportation facility,
- (b) Information that may be useful to local communities to protect future land development from becoming incompatible with anticipated highway noise levels, and
- (c) Non-eligibility for Federal-aid participation for Type II projects as described in §772.13(b) of this chapter.

For Type I projects where there are undeveloped lands the flow chart at the end of this policy titled *Final Noise Summary Report Process* illustrates the process for informing local officials of noise compatible land use planning concepts.

## FEDERAL PARTICIPATION

Federal funds may be used for noise abatement measures when:

1. Traffic noise impacts have been identified
2. Abatement measures have been determined feasible and reasonable per this noise policy.

## CONSTRUCTION NOISE

The evaluation and control of construction noise must be considered as well as the traffic noise. The noise sensitive receptors that are located directly adjacent to this project are those that are of major concern in this study of construction noise. These same receptors were also of concern in the traffic noise study.

The following are some basic categories of mitigation measures for construction noise.

**Design Considerations:** This includes measures in the plans and specifications to minimize or eliminate adverse impacts.

**Community Awareness:** It is important for people to be made aware of the possible inconvenience and to know its approximate duration so they can plan their activities accordingly. It is the policy of the NDOR that information concerning the upcoming project construction is submitted to all local news media.

**Source Control:** This involves reducing noise impacts from construction by controlling the noise emissions at their source. This can be accomplished by specifying proper muffler systems, either as a requirement in the plans and specifications on this project or through an established local noise ordinance requiring mufflers. Contractors generally maintain proper muffler systems on their equipment to ensure efficient operation and to minimize noise for the benefit of their own personnel as well as the adjacent receptors.

**Site Control:** Site control involves the specification of certain areas where extra precautions should be taken to minimize construction noise. One way to reduce construction noise impact at sensitive receptors is to operate stationary equipment, such as air compressors or generators, as far away from the sensitive receptors as possible. Another method might be placing a temporary noise barrier in front of the equipment. As a general rule, good coordination between the project engineer, the contractor, and the affected receptors is less confusing, less likely to increase the cost of the project, and is a more personal approach to work out ways to minimize construction noise impacts in the more noise-sensitive areas. No specific construction-noise, site-control specifications will be included in the policy.

**Time and Activity Constraints:** Limiting work hours on a construction site can be very beneficial during the hours of sleep or on Sundays and holidays. However, most construction activities do not occur at night and usually not on Sundays. Exceptions due to weather, schedule, night time work to benefit day time traffic operations and a time-related phase of construction work could occur. No specific constraints will be incorporated in this policy. Enforcement of these constraints could be handled through a general city or county ordinance, either listing the exceptions or granting them on a case-by-case basis.

## NOISE ABATEMENT CRITERIA TABLE

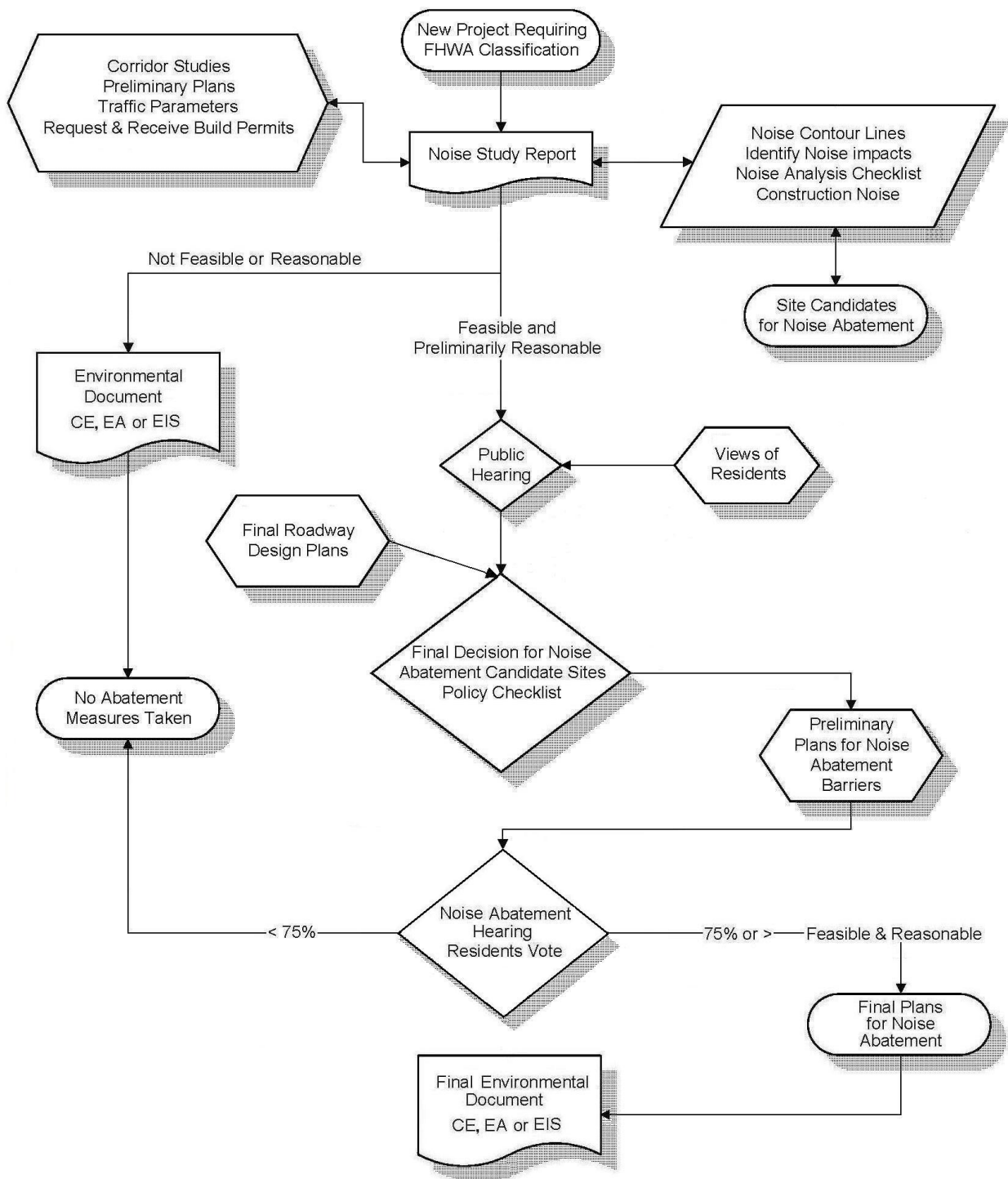
[Hourly A-weighted Sound Level\_decibels (dB(A))]

Activity Category	Activity <sup>1</sup> Leq(h)	Evaluation Location	Activity Description
<b>A</b>	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
<b>B<sup>2</sup></b>	67	Exterior	Residential
<b>C<sup>2</sup></b>	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, trail crossings.
<b>D</b>	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, television studios.
<b>E<sup>2</sup></b>	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F.
<b>F</b>	-----	-----	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities, (water resources, water treatment, electrical), and warehousing.
<b>G</b>	-----	-----	Undeveloped lands

<sup>1</sup>The Leq(h) Activity Criteria values are for impacted determination only, and are not design standards for noise abatement.

<sup>2</sup>Includes undeveloped lands permitted for this activity category.

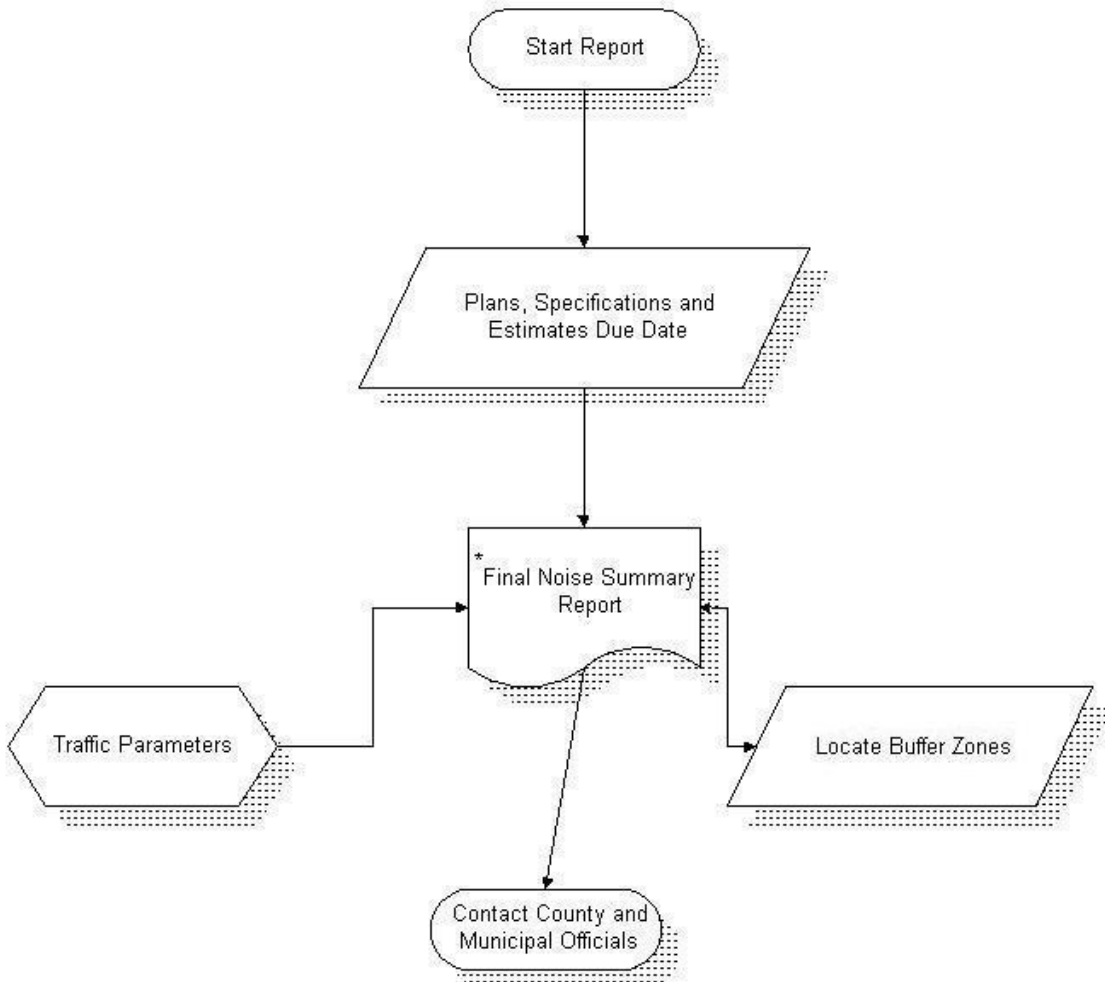
## NOISE ANALYSIS AND ABATEMENT PROCESS





## FINAL NOISE SUMMARY REPORT PROCESS

Information for Local Officials on Noise Compatible Land Use Planning



\* This report is to prevent future traffic noise impacts on currently undeveloped lands by providing estimates of future noise levels to local planning officials so as to protect future land development from becoming incompatible with anticipated highway noise levels.

## **BALLOT**

NAME (PLEASE PRINT): \_\_\_\_\_

PROPERTY ADDRESS (PLEASE PRINT): \_\_\_\_\_

VOTE FOR ONE:

\_\_\_\_\_ Accept noise wall

\_\_\_\_\_ Reject noise wall

75% of points from returned ballots must be a YES (Accept) vote in order for your area to qualify for noise abatement. The most points per unit possible are 4, based on the voting rules, as outlined on page 11 of the Nebraska Department of Roads Noise Analysis and Abatement Policy. This policy can be found online at the following location <http://www.dor.state.ne.us/environment/>. All of your points will be counted the same based on your vote on the ballot. For example, if you vote to accept the wall and your ballot is worth 3 points all three points will be in favor of the wall. If your site chooses to reject construction of a noise wall (less than 75% accept votes), the Nebraska Department of Roads (NDOR) will not reconsider constructing a noise wall at this location unless another major roadway project is proposed.

Noise walls will be constructed of precast concrete panels of a predetermined pattern and color.

You will be given 15 days after the public information meeting date to return the ballot. If the ballot is not returned another identical ballot will be mailed. If the second ballot is not returned after an additional 15 days, you will not have a vote. Disregard this Ballot if you have already returned a ballot.

\_\_\_\_\_  
(Signature)

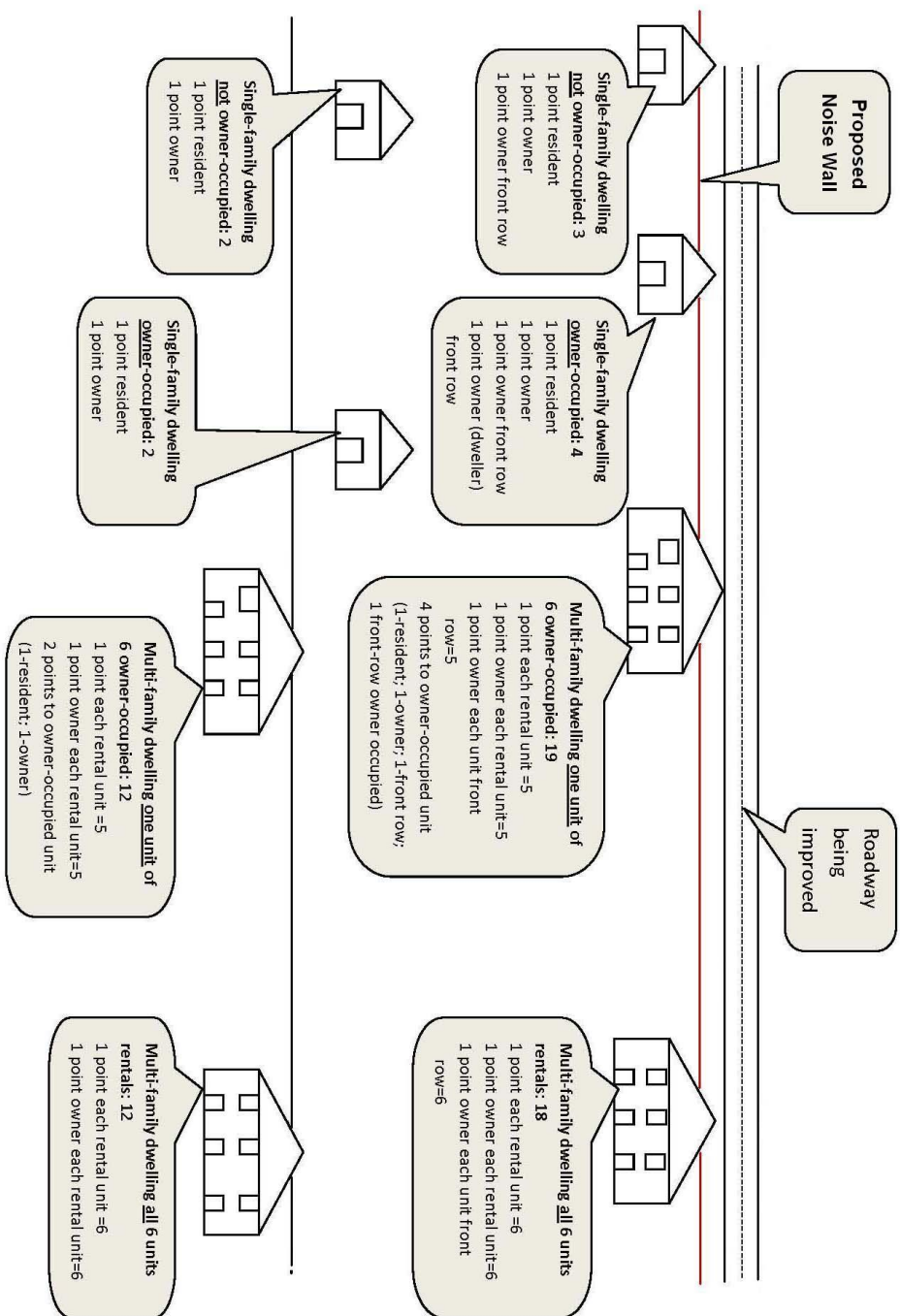
\_\_\_\_\_  
(Date)

Under Title VI of the Civil Rights Act of 1964 and related statutes, the NDOR ensures that no person shall, on the grounds of race, color, national origin, age, disability, or sex, be excluded from participation in, denied the benefits or services of, or be otherwise subjected to discrimination in all programs, services or activities administered by the NDOR.

Materials can be provided in alternative languages or formats such as large print, Braille, audio recording, or on computer disk for people with disabilities by calling **[insert name of responding official]** of the **[insert office name]** at **[insert telephone number]**.

Materiales pueden suministrarse en lenguajes alternativos o formatos tales como grabación de audio de letra grande, Braille, o en disco de computadora para personas con discapacidades llamando a **[name]** el **[Agency]** en **[phone number]**.

# **VISUAL DEMONSTRATION OF BENEFITED RECEPTOR POINT DISTRIBUTION**



### Voting/Point Tally Sheet (with example)

Address	Total points available per line*	Point for Living in Unit		Point for Owning Unit	Point for Front Row Owner	Point for Front Row Owner Living in Unit	Total Points	
		Owner	Renter				Yes	No
123 Apple ST #1	2	Y		Y			2	
123 Apple ST #2	2		N	Y			1	1
123 Apple ST #3	2		Y	Y			2	
124 Apple ST	2		Y	Y			2	
126 Apple ST	2	Y		Y			2	
127 Apple ST (Vacant)	1			N				1
456 Ridgeway RD	4	N		N	N	N		4
457 Ridgeway RD	3		Y	Y	Y		3	
<b>Total Points Available</b>	18	----	----	----	----	<b>Total Yes/No</b>	12	6
*total points available per unit in a multi-family dwelling, or total points per single-family dwelling, whichever is applicable per line in the table						<b>Percent in Favor of Wall</b>	<b>66.7 %</b>	

## **APPENDICES**

An updated copy of 23 CFR 772 can be found at the following website

<http://ecfr.gpoaccess.gov>

The NDOR noise policy can be found electronically at

<http://www.dor.state.ne.us/environment/index.htm>